

REMARKS

Applicants and the undersigned are most grateful for the time and attention accorded this application by the Examiner. The Office is respectfully requested to reconsider the rejections applied against the instant application in light of the claim amendments rendered herein and the remarks presented below.

Claims 1-19 are pending in the instant application.

The Office indicated that Figure 1 should be designated by a legend such as --Prior Art--. In order to expedite prosecution of the instant application, this change has been proposed in the substitute drawing sheet included herewith for consideration by the Office. Upon approval of the proposed change, a formal drawing will be prepared reflecting the change.

Claims 2-6 and 11-15 were rejected under 35 U.S.C. 112, second paragraph. Reconsideration and withdrawal of the rejection are hereby respectfully requested. In each of the claims in question, "speech recognizer" has been changed to "recognizer" to be consistent with Claims 1 and 10. Also, a minor amendment has been made to correct the dependency of Claim 11.

Claims 1-19 were rejected under 35 U.S.C. 103 in view of "Applicant's admittance" and Kuga et al. Reconsideration and withdrawal of the rejection are hereby respectfully requested.

Independent Claims 1, 10 and 19 have each been amended, essentially, to indicate that quality of textual input is improved for entry into an indexing database, whereby errors produced in the recognizing of words and which are detrimental to indexing performance are reduced. It is respectfully submitted that the applied art does not teach or suggest such an arrangement.

The “admittance”, as set forth in Figure 1, relates merely to a conventional indexing arrangement in which there is no translator or translation model involved. Kuga, on the other hand, relates to an index generation system that appears to address particular complications presented by the Japanese language. The Office indicates that Kuga uses translation “for the purpose [of] selecting only strings that have meaningful importance as index entries thereby improving the storage bandwidth of the index database”. Such a purpose falls far short of what is accomplished in connection with at least one presently preferred embodiment of the present invention, and as defined by independent Claims 1, 10 and 19.

Kuga appears only to contemplate “translation” as a process for converting words into morphemes, wherein the improvement of textual input for entry into an indexing database is not involved. Reference will now be made to an illustrative and non-restrictive example from the instant application. As shown in Figure 2a, and as discussed on pp. 6-7 of the instant application, noisy text output 206 from a recognizer (in this example, a speech recognizer) 205 may be input into a translator (in this example, a translation model) 250 that transforms the raw output 206 into an improved output 252 of text features for being stored in a database 208 (in this example, an audio indexing

database). Thus, words that are misrecognized in speech recognition are essentially converted, in this example via machine translation, into correct words.

Generally, it should be appreciated that while, in the case of Kuga, converting words into morphemes is a relatively simple process with little ambiguity (*i.e.*, most words have only a few morphemes or less, and sometimes only one), the correction of errors occurring in recognition would appear to be a complex and even highly ambiguous task (*e.g.*, a misrecognized word may potentially be rendered as any of many different possible words). Thus, it will be appreciated that vastly different methodologies are needed for the aforementioned tasks. In the case of Kuga, word-to-morpheme conversion can often be accomplished with, for instance, a small set of handwritten rules while the type of improvement (or correction) of recognition errors contemplated in accordance with at least one presently preferred embodiment of the present invention, and as defined in Claims 1, 10 and 19, is bound to be much more complex. For instance, such improvement may be accomplished by automatically building a correction system by statistically modelling a large collection of examples (see p. 8, lines 7-11 of the instant application), indeed a much different and much more complex task than the word-to-morpheme conversion contemplated in Kuga.

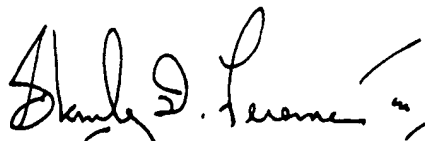
In view of the foregoing, it is respectfully submitted that independent Claims 1, 10 and 19 fully distinguish over the applied art and are thus allowable. By virtue of dependence from what are believed to be allowable independent Claims 1 and 10, it is respectfully submitted that Claims 2-9 and 11-18 are also allowable. It will be noted that Claims 7 and 16 relate to an embodiment involving the use of a speech recognizer for

recognizing verbal audio input and the use of an audio indexing database, applications not apparently addressed in Kuga. Claims 8 and 17, which indicate the training of a "translator" on a corpus of automatically and by-hand transcribed data, with the data originating from a domain substantially similar to that intended to be addressed by the recited "recognizer", are believed to even more fully distinguish over the applied art in that Kuga appears to involve the use of manual intervention to select terms to be excluded from a database of indexing terms.

Applicants recognize that the Office has considered the prior art made of record but not applied against the claims to have been not sufficiently relevant as to have been applied against the claims.

In summary, it is respectfully submitted that the instant application, including Claims 1-19, is in condition for allowance. Notice to the effect is hereby earnestly solicited.

Respectfully submitted,



Stanley D. Ference III
Registration No. 33,879

FERENCE & ASSOCIATES
129 Oakhurst Road
Pittsburgh, Pennsylvania 15215
(412) 781-7386
(412) 781-8390 - Facsimile

Attorneys for Applicants

MARKED-UP VERSION OF CLAIM AMENDMENTS

Claims 1-6, 10-15, and 19 are rewritten as follows:

- 1. **(Amended)** An indexing system comprising:
- a recognizer which recognizes words;
- an indexing database; and
- a translator which accepts textual input, having originated from said recognizer, and which [reconfigures] is adapted to improve the quality of said textual input for entry into said indexing database, whereby errors produced by said recognizer and which are detrimental to indexing performance are reduced, and wherein, immediately prior to reconfiguration, said textual input appears as a feature-extracted transformation of at least one word recognized by said recognizer.--
- 2. **(Amended)** The system according to Claim 1, further comprising a feature extractor which transforms words recognized by said [speech] recognizer into predetermined textual features and which provides the textual features as the textual input into said translator.--
- 3. **(Amended)** The system according to Claim 2, wherein the textual features comprise morphs of words recognized by said [speech] recognizer.--
- 4. **(Amended)** The system according to Claim 2, wherein the textual features comprise stems of words recognized by said [speech] recognizer.--

-- 5. **(Amended)** The system according to Claim 1, wherein said [speech] recognizer is adapted to transform recognized words into predetermined textual features and provide the textual features as the textual input into said translator.--

-- 6. **(Amended)** The system according to Claim 1, wherein said [speech] recognizer is adapted to provide the textual input into said translator and said translator is adapted to transform the textual input into predetermined textual features prior to reconfiguration of the textual input for entry into said indexing database.--

-- 10. **(Amended)** A method of indexing, said method comprising the steps of:

providing an indexing database;

providing a recognizer which recognizes words; and

providing a translator which accepts textual input having originated from said recognizer;

said method further comprising the steps of:

with said recognizer, recognizing words; and

with said translator, accepting textual input having originated from said recognizer, and [reconfiguring] improving the quality of said textual input for entry into said indexing database, whereby errors produced by said recognizer and which are detrimental to indexing performance are reduced, and wherein, immediately prior to

reconfiguration, said textual input appears as a feature-extracted transformation of at least one word recognized by said recognizer.--

-- 11. (**Amended**) The method according to Claim [1] 10, further comprising the steps of:

providing a feature extractor; and

with said feature extractor, transforming words recognized by said [speech] recognizer into predetermined textual features and providing the textual features as the textual input into said translator.--

--12. (**Amended**) The method according to Claim 11, wherein said step of transforming words into textual features comprises transforming words recognized by said [speech] recognizer into morphs.--

-- 13. (**Amended**) The method according to Claim 11, wherein said step of transforming words into textual features comprises transforming words recognized by said [speech] recognizer into stems.--

--14. (**Amended**) The method according to Claim 10, further comprising the [steps] step of:

with said [speech] recognizer, transforming recognized words into predetermined textual features and providing the textual features as the textual input into said translator.--

-- 15. (**Amended**) The method according to Claim 10, further comprising the steps of:

with said [speech] recognizer, providing the textual input into said translator; and
with said translator, transforming the textual input into predetermined textual features prior to said reconfiguring of the textual input for entry into said indexing database.--

-- 19. (**Amended**) A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for providing indexing, said method comprising:

recognizing words; and
accepting textual input related to said recognized words, and [reconfiguring]
improving the quality of said textual input for entry into an indexing database, whereby errors produced in said recognizing and which are detrimental to indexing performance are reduced, and wherein, immediately prior to reconfiguration, said textual input appears as a feature-extracted transformation of at least one word.--